

REMARKS/ARGUMENTS

In response to the Office Action mailed April 28, 2009, Applicants request reconsideration of the rejections in light of the foregoing amendments to the claims and the following remarks. A one month request for extension of time to respond is attached hereto.

Support for the amendments to claims 1 may be found in the last paragraph of page 3 over to page 4 of the specification as filed. Applicants have also corrected the status designation of the claims from their previous response.

Claims 1 and 5-11 stand rejected under 35 USC §103(a) as being unpatentable over Tiep et al. (4,535,767) and further in view of Lecourt (6,592,848) and further in view of Payton (4,660,555).

The Examiner contends that Tiep discloses a nasal cannula that can be used for delivering a breathable gas mixture comprising helium and oxygen to a patient, the nasal cannula comprising a length of high pressure narrow bore tubing having a proximal end region that can be used for connecting to a high pressure source of the breathable gas mixture at a pressure in the range of 100 bar to 300 bar and a distal end region connected to at least one nasal administration device, wherein the nasal administration device has at least one orifice that can be used for the expansion of the breathable gas mixture.

Although Tiep discloses a nasal cannula that is capable of performing the intended use of the apparatus claimed, Tiep lacks the specific teaching of the gases and pressure as claimed.

Lecourt teaches that it is well known to combine helium and oxygen gases together for the treatment of respiratory disorders and teaches that these gases may be packaged between 2 and 300 bar.

Payton teaches a nasal prong (10) having a plurality of perforations (30) that extend from the main passageway to an outer surface which ensure a free and adequate supply of gas in the event that one of the other passageways gets plugged or stopped.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the nasal cannula disclosed by Tiep to deliver the gases taught by Lecourt using nasal prongs with a plurality of perforations as taught by Payton in order to treat the respiratory system of patients with an easy to use nasal cannula that would ensure gas delivery to a patient even in the event one or more of the passageways getting plugged or stopped.

Regarding claim 7, Tiep discloses an apparatus that can be used for administering a breathable gas mixture of helium and oxygen and discloses a supply tank as a means for supplying breathable gas at a high pressure and a nasal cannula with a length of high pressure narrow bore tubing having a proximal end region which can be used for connecting a high pressure source of the breathable gas mixture at a pressure in the range of 100 bar to 300 bar and a distal end region connected to at least one orifice that can be used for the expansion of the breathable gas mixture.

Although Tiep discloses a nasal cannula that is capable of performing the intended use of the apparatus claimed, Tiep lacks the specific teach of the gases and pressure as claimed.

Lecourt teaches that it is well known to combine helium and oxygen gases together for the treatment of respiratory disorders and teaches that these gases may be packaged between 2 and 300 bar.

Payton teaches a nasal prong (10) having a plurality of perforations (30) that extend from the main passageway to an outer surface which ensure a free and adequate supply of gas in the event that one of the other passageways gets plugged or stopped.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the nasal cannula disclosed by Tiep to deliver the gases taught by Lecourt using nasal prongs with a plurality of perforations as taught by Patyon in order to treat the respiratory system of patients with an easy to use nasal cannula that would ensure gas delivery to a patient even in the event of one or more of the passageways getting plugged or stopped.

Regarding claim 8, Tiep discloses pressurized supply tank for administering a gas.

Regarding claims 9 and 11, Lecourt teaches that it has been customary to treat patients with 70-75% helium and 20-25% oxygen, thus teaching the specific percentages of helium and oxygen.

Regarding claim 10, Lecourt teaches packaging a combination of helium and oxygen at a pressure between 2 and 300 bar.

Applicants contend that the invention as claimed is not obvious over the combination of the three references cited. Applicants claim a nasal cannula for delivering a breathable gas mixture comprising helium and oxygen to a patient,

the nasal cannula comprising a length of tubing having a proximal end region for connection to a high pressure source of the pressure breathable gas mixture at a pressure in the range of 100 bar to 300 bar and a distal end region connected to at least one nasal administration device comprising a nasal prong or pair of nasal prongs formed with a plurality of perforations thereby providing the flow of said gas mixture from said cannula to said patient, wherein the nasal administration device or the distal end region of the tubing has at least one orifice for the expansion of the breathable gas mixture.

They also claim an apparatus for administering a breathable gas mixture comprising helium and oxygen including means for supplying the breathable gas mixture at a high pressure and a nasal cannula comprising a length of tubing having a proximal end region for connection to a high pressure source of the breathable gas mixture at a pressure in the range of 100 bar to 300 bar and a distal end region connected to at least one nasal administration device comprising a nasal prong or pair of nasal prongs formed with a plurality of perforations thereby providing the flow of said gas mixture from said cannula to said patient, wherein the nasal administration device or the distal end region of the tubing has at least one orifice for the expansion of the breathable gas mixture.

Tiep in Fig. 4 shows the cannula 32 to be a smooth bore that is placed in the nostrils of a patient. Applicants invention utilizes a nasal prong or pair of nasal prongs formed with a plurality of perforations as noted in Fig. 3, number 22. This will assist in delivering the expanded gas that is at approximately atmospheric pressure to the patient.

Lecourt teaches a binary gaseous mixture of helium and oxygen and its use in treating respiratory situations. Lecourt however does not teach a device which can be used to direct the gaseous mixture into the nostrils of a patient.

Payton in Fig. 3 shows perforations 30 used in the event that the primary central oxygen outlet 25 becomes blocked. These perforations which extend laterally from the main passageway come into use when the main passageway is obstructed.

Applicants' use of the nasal prong or pair of nasal prongs formed with a plurality of perforations is not used as a back-up gas passageway. The prongs with perforations of the present invention are used as the primary passageway of the gas mixture of helium and oxygen to the nasal passages of a patient. They are not secondary or back-up passages and are used solely as the primary passageway. One having ordinary skill in the art would not look to a secondary or back-up passageway and be motivated to use that as the primary passageway for passing the gas mixture to a patient.

Applicants contend that this combination of references does not teach their invention. The use of a plurality of perforations in the nasal prong or prongs is not taught in Tiep. This provides more efficient delivery of a gas or gas mixture regardless of whether it is oxygen and helium or another gas or mixture entirely. Based on the smooth bore taught in Tiep there is no indication that gases that are useful in Tiep would be useful or effective in Applicant's nasal cannula. Applicants would not then look to Lecourt to use the taught gas mixture in the process of Tiep and arrive at their invention. Further, one of ordinary skill in this art would not look to Payton for perforations in the nasal prong or prongs that are back-up or secondary passageways for the primary passageways of the present invention. The main passageway for oxygen delivery 20 in Payton is a bore or

tube not dissimilar to the tubing used in Tiep to deliver gases. Thus, the operations from the standpoint of the primary passageway for the delivery of gases are the same between Tiep and Payton. There is no motivation to use the backup or secondary passageways for delivering a gas mixture as the primary delivery system based on the same operations of Tiep and Payton. Given the differing operations of these references, their combination does not teach or suggest the invention. Reconsideration and reversal of this rejection are respectfully requested.

Claim 2 stands rejected under 35 USC §103(a) as being unpatentable over Tiep et al. (4,535,767) and in view of Lecourt (6,592,848) and Payton (4,660,555), as applied to claim 1 above, and further in view of Smart (4,685,456).

The combined references disclose all the limitations of claim 2 except the tubing being coiled. Smart teaches a self-retracting coiled tube for the delivery of gas to a patient. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have substituted the gas delivery tube of Tiep with a self retracting coiled tube as taught by Smart in order to obtain a nasal cannula with a tube that can be easily expanded and contracted to accommodate a patient's movement.

Regarding claims 3 and 4, the choice of a known material based on its suitability for the intended use is a design consideration well within the skill in the art.

In claim 2, Applicants claim that the tubing is coiled. The reason that the tubing is coiled is to assist in managing the flow of the gas mixtures. As Applicants have contended above, the combination of Tiep, Lecourt and Payton do not suggest the invention of claims 1 and 5-11. The design of Applicants' nasal cannula is different from the smooth bore design of Tiep and the suggested use

of the oxygen and helium mixture, nor the means by which it is ultimately directed to a patient does not derive motivation from the combination of Tiep, Lecourt and Payton. Given the lack of teaching in this combination, and further that coiled tubing serves the purpose of managing the flow of gas mixtures, Applicants would not look to a reference (Smart) which teaches that a coiled hose can be used to limit snagging or getting caught in doors and equipment for their coiled hose. The purposes of the coiling are quite different and this combination of four references does not teach the invention of claim 2. Reconsideration and reversal of this rejection are respectfully requested.

The references made of record and not cited have not been discussed as they are considered less relevant than those relied upon.

For these reasons Applicants submit that their claims define patentable subject matter and are in condition for allowance. Prompt favorable action to that end is respectfully requested. The Examiner is invited to call the undersigned should any question arise during the reconsideration of the subject application.

Respectfully submitted,

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Date: August 13, 2009